

Arathane[®] CW 8690

Arathane[®] HW 8691

Automotive Polyurethane Encapsulation System

General

Arathane[®] CW 8690 with Arathane[®] HW 8691 is a black, low viscosity, two-part polyurethane, encapsulating system designed specifically for the protection of sensitive electronic components in automotive applications. Targeted applications include auto modules, auto sensors, under-the-hood applications.

Applications

Arathane[®] CW 8690 with Arathane[®] HW 8691 offers the automotive component manufacturer flexibility in choosing a system for component protection. This system provides the end-user a high quality, cost effective, process-adaptable encapsulant with a demonstrated history of long-term component protection.

Features

Rapid gel time in small masses
Excellent thermal cycling resistance (-40°C to 125°C)
Adhesion to most substrates (plastics, aluminum and PWB materials)
Proven long-term performance for automotive applications

Typical Properties*	Arathane® CW 8690	
	Viscosity at 25°C, cPs Spindle #1 @ 20rpm	20 – 60
	Specific gravity, g/cm ³ As supplied form	1.15 – 1.25 Amber Liquid
	Arathane® HW 8691	
	Viscosity at 25°C, cPs Spindle #3 @ 20 rpm	1,500 – 4,500
	Specific gravity, g/cm ³ As supplied form	1.00 – 1.10 Black Liquid
	Mixed	
	Viscosity at 25°C, cps Spindle #4 @ 20 rpm	2,000 – 5,000 @ 5min
	Hardness, Shore A	70 – 90

* Typical properties are based on Huntsman's test methods. Copies are available upon request.

Packaging & Storage The products described in this instruction sheet should be stored at 70-90°F. They are moisture sensitive and packaged under a blanket of dry nitrogen. Maintain factory seal. After use, reblanket with dry nitrogen and tightly reseal. Under these conditions their shelf life will be up to one year from date of shipping.

Resin may crystallize upon storage. If crystallized, vent container and heat to 125-145°F until crystals dissolve. Stir well after product has liquefied. Contact Customer Service for packaging information.

System Preparation Mix using Meter-mix dispensing equipment or manually as follows.

Weigh the desired amount of polyurethane resin into mixing container whose weight has been tared. If material has been heated, allow to cool to 25±5°C or 75±9°F before continuing. The pot life of mixed material will be shortened considerably if warm material is used.

Weigh the desired amount of hardener into mixing container with resin. Mix thoroughly by means of mechanical mixer or manual stirring. Check for uniform color as a sign of completed mixing.

Vacuum deairing is recommended to remove any entrapped air from the mixing procedure. For deairing most products, 1-2 minutes under full vacuum is recommended for each quart of volume of mixed material. Quickly dispense potting material into cavity or channel to be sealed; be certain not to trap air bubbles as viscosity builds.

To reduce the cure time, the casting is often allowed to gel at room temperature and then post-cured 2-6 hours at 60-80°C. Small castings can be processed and directly cured at slightly higher temperatures (40-60°C). In case of humid environments (≥75% relative humidity) it is advisable to effect a full cure in an oven at 40-60°C in order to prevent water absorption, leading to streaks on the surface of the castings.

Mix ratios

	Parts by weight	Parts by volume
Arathane® CW 8690	24	21.6
Arathane® HW 8691	100	100

Processing data

(average values)

Initial viscosity at 25°C, cPs	2,000 – 5,000 @ 5min
Time to reach 100,000cPs at 25°C, min	8
Pot-Life at 25°C, min	15

Recommended cure time:

- A. 72 hours at 25°C
- B. 12 hours at 60°C
- C. 1 hour at 80°C

**Physical Properties
(typical values)**

Hardness, Shore A	75
Volume shrinkage, %	1.21
Elongation at break, psi	160
Tensile strength at break, psi	1,380
Tg per TMA, °C	- 5
Coefficient of thermal expansion, in/in/°C	
Alpha 1 (< 5°C)	54 x 10 ⁻⁶
Alpha 1 (-5 – 125°C)	200 x 10 ⁻⁶
Water absorption by weight, %	
24 hours at 25°C	2.1
Thermal conductivity, Cal/sec.cm ² .°C	4.9 x 10 ⁻⁴

**Electrical Properties
(typical values)**

Surface Resistivity, Ω		6.1 x 10 ¹³
Volume Resistivity, Ωcm	at 25°C	7.0 x 10 ¹²
Dielectric Strength, V/mil		520
Dielectric Constant		
	@ 60 Hz	4.20
	@ 1MHz	4.60
Dissipation Factor		
	@ 60 Hz	0.020
	@ 1 MHz	0.073

Fluid Exposure Data (4 hours at 100°C)	Fluid	% Δ Mass (Average)	% Δ Dimensions (Length)
	Power Steering Fluid	2.1	0.6
	Motor Oil	3.6	1.1
	Transmission Fluid	4.6	1.2
	Coolant	5.7	1.5

Handling/Safety Precautions

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

Arathane® CW 8690

Warning! Harmful if inhaled. Causes skin and eye irritation. Causes allergic skin and respiratory reaction. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Arathane® HW 8691

Caution! In accord with good industrial practice, handle with due care. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

First Aid

In case of contact:

Skin: Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Discard contaminated shoes and other articles made of leather.

Eyes: Immediately flush with water for at least 15 minutes. Call a physician.

Ingestion: If conscious, give plenty of water to drink. Do not induce vomiting. Call a physician.

Inhalation: Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Other: Referral to physician is recommended if there is any question about the seriousness of an injury

Important

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Note

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with Arathane[®] HW 8691
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